

11. The jet printing ink of claim 1, wherein the basic polymer has a side-chain containing a nitrogen atom-containing heterocyclic group.

12. The jet printing ink of claim 1, wherein the nitrogen atom-containing heterocyclic group is 1-imidazolyl.--

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow are respectfully requested.

Claims 1, 2, 5 and 8-12 are pending in the application, Claims 10-12 having been added above.

By the amendments, independent Claims 1, 2 and 9 have been revised by replacing "a 1-imidazolyl" with "a tertiary amino group, a quaternary ammonium group, or a nitrogen atom-containing heterocyclic group." Support can be found at least in originally presented Claims 1, 2 and 9 which set forth this same feature. Claims 1 and 9 have further been amended by pointing out that the ink further comprises glycerol. Support can be found at least in Examples 1-12. Claims 10-12 have been newly added to point out further aspects of the invention. In particular, Claim 10 sets forth that the "glycerol is contained in an amount of 2 to 5 weight %," support for which can be found at least in Examples 1-12. Claim 11 sets forth that "the basic polymer has a side-chain containing a nitrogen atom-containing heterocyclic group," and Claim 12 recites that "the nitrogen atom-

containing heterocyclic group is 1-imidazolyl," support for which can be found at least in original Claims 3 and 4, respectively.

Turning now to the rejections, Claim 2 was rejected under 35 U.S.C. §112, second paragraph, for the reasons set forth in section 3 of the Official Action. This rejection has been obviated by correcting replacing "A" with "Am" in formula (I). Accordingly, withdrawal of this rejection is respectfully requested.

In the prior art rejections, Claims 1, 2, 5, 8 and 9 were rejected under 35 U.S.C. §103(a) as being obvious over *Nigam et al* (U.S. Patent No. 5,973,025) in view of *Schwarz, Jr.* (U.S. Patent No. 5,990,198); Claims 1, 2, 5, 8 and 9 were rejected under §103(a) as being obvious over *Bates et al* (U.S. Patent No. 5,958,999) in view of *Breton et al* (U.S. Patent No. 5,938,827) and *Nigam et al*; and Claims 1, 2, 5, 8 and 9 were rejected under §103(a) as being obvious over *Schwarz, Jr.* or *Gundlach et al* (U.S. Patent No. 6,054,505). The reasons for these rejections are set forth in sections 5-7, respectively, of the Official Action. For at least the following reasons, withdrawal of these rejections is respectfully requested.

The present invention relates to a jet printing ink and an ink-image forming method using an ink jet printer. Claim 1 as amended above sets forth a jet printing ink comprising a dye and an aqueous medium, which further comprises glycerol and a basic polymer having a side-chain containing a tertiary amino group, a quaternary ammonium group, or a nitrogen atom-containing heterocyclic group. The basic polymer is contained in an amount of 0.1 to 50 weight % and the ink has a viscosity of 50 cp or lower at 25°C. Independent Claim 9 is directed to a method of forming an ink image on a receiving sheet using an ink

jet printer. The method comprises jetting drops of an ink as described above with respect to Claim 1.

Based on a complete understanding of the present invention as now claimed, it is respectfully submitted that the claims cannot properly be rejected based on the documents as applied in the Official Action. For example, none of *Nigam et al*, *Schwarz*, *Bates et al*, *Breton et al* or *Gundlach et al* recognize the surprising and unexpected results that can be achieved with the jet printing inks and methods of forming an ink image in accordance with the present invention. In this regard, the Examiner's attention is directed to the examples set forth in the subject specification as well as to the attached Declaration Under Rule 132.

Examples 1-12 (see specification at pages 37-38) are in accordance with the invention, and include the basic polymer and dye as set forth in Table 2, as well as glycerol in the specified weight % (2-5 weight %). Comparison Examples 1-5 (see specification at pages 35-37) do not include a basic polymer but include glycerol in an amount of 7 weight %. Comparison Examples 6-17 (see Declaration at pages 1-3) include a basic polymer as specified in Table 2 but do not include a glycerol component. Comparison Examples 6-17 generally correspond to Examples 1-12, respectively, except that no glycerol component was included.

The prepared aqueous inks were evaluated as described on pages 36-37 of the specification. An image was printed with the inks on a photo-gloss paper sheet ("photo paper") and a super-fine gloss paper sheet ("genuine paper"), and each printed image was evaluated for hue and resistance against light. The results are summarized in Table 2 on page 4 of the Declaration.

As can be seen from Table 2, an image of good hue and high resistance to light was obtained for Examples 1-12 for both the photo paper and genuine paper. Further, the hue for the genuine paper samples were improved for each of Examples 1-12 in accordance with the invention compared with Comparison Examples 6-17 which employed no glycerol. It can further be seen that Comparison Examples 1-5, which employed no basic polymer, exhibited relatively poor results with respect to hue and resistance to light for the genuine paper.

The results in Table 2 show that the jet-printing inks in accordance with the invention, which comprise a basic polymer and glycerol as claimed, provide an image of good hue and high resistance to light for different types of receiving sheets. The results further show that if glycerol is not used, the quality of hue in the image is dependent on the receiving sheet. Moreover, as noted in the Declaration, the images formed of the inks of Examples 1-12 showed less blotting and good resistance in water.

These results are all the more surprising in light of the viscosity increasing properties of the basic polymer and glycerol components. In this regard, it is known that jet printing inks should have a low viscosity because the ink is ejected through a nozzle. Therefore, beneficial results from using the basic polymer and glycerol, which would act to increase the viscosity of the inks, could not have been expected.

For the above reasons, the jet-printing inks and methods in accordance with the invention are believed to provide surprising results which are not recognized by the applied documents. Accordingly, withdrawal of the §103(a) rejections is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at her earliest convenience.

Respectfully submitted,

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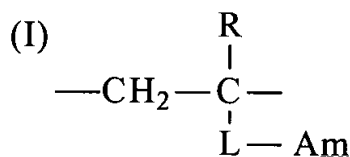
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**Attachment to AMENDMENT AND SUBMISSION OF DECLARATION PURSUANT
TO RULE 132 dated May 14, 2001**

Marked-up Claims 1, 2 and 9

1. (Twice Amended) A jet printing ink comprising a dye and an aqueous medium, which further comprises glycerol and a basic polymer having a side-chain containing a [1-imidazolyl,] tertiary amino group, a quaternary ammonium group, or a nitrogen atom-containing heterocyclic group, wherein the basic polymer is contained in an amount of 0.1 to 50 weight % and the ink has a viscosity of 50 cp or lower at 25°C.

2. (Twice Amended) The jet printing ink of claim 1, wherein the basic polymer contains a repeating unit of the following formula (I):



in which R is a hydrogen atom or methyl; L is a single bond, -CO-, -O-, an alkylene group, an arylene group, or a combination thereof; and Am is [1-imidazolyl] a tertiary amino group, a quaternary ammonium group, or a nitrogen atom-containing heterocyclic group.

9. (Twice Amended) A method of forming an ink image on a receiving sheet using an ink jet printer, which comprises jetting drops of an ink comprising a dye and an aqueous



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medium which further comprises glycerol and a basic polymer having a side-chain containing [1-imidazolyl,] a tertiary amino group, a quaternary ammonium group, or a nitrogen atom-containing heterocyclic group. wherein the basic polymer is contained in an amount of 0.1 to 50 weight %, and the ink has a viscosity of 50 cp or lower at 25°C.